

In the Abstract:

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ABSTRACT

--A low-cost fiber-optic sensor system for composite pressure tanks detects structural degradation of composite material pressure tanks. Light power attenuation in embedded optical fiber simulates tank volume change and replaces hydrostatic tank testing. Current U.S. Department of Transportation rules require that all pressure tanks be hydrostatically tested to verify structural integrity. Tanks do not have to be removed from service for testing. With the invention, testing can be done in-situ. For composite LNG tanks used on vehicles or emergency inflation devices used on aircraft for escape ramps, in-situ testing offers substantial maintenance cost savings. because of the simplicity of the test procedure, more frequent structural checks can be made economically to improve the safe operation of composite tanks.